

Innovation for Cool Earth Forum

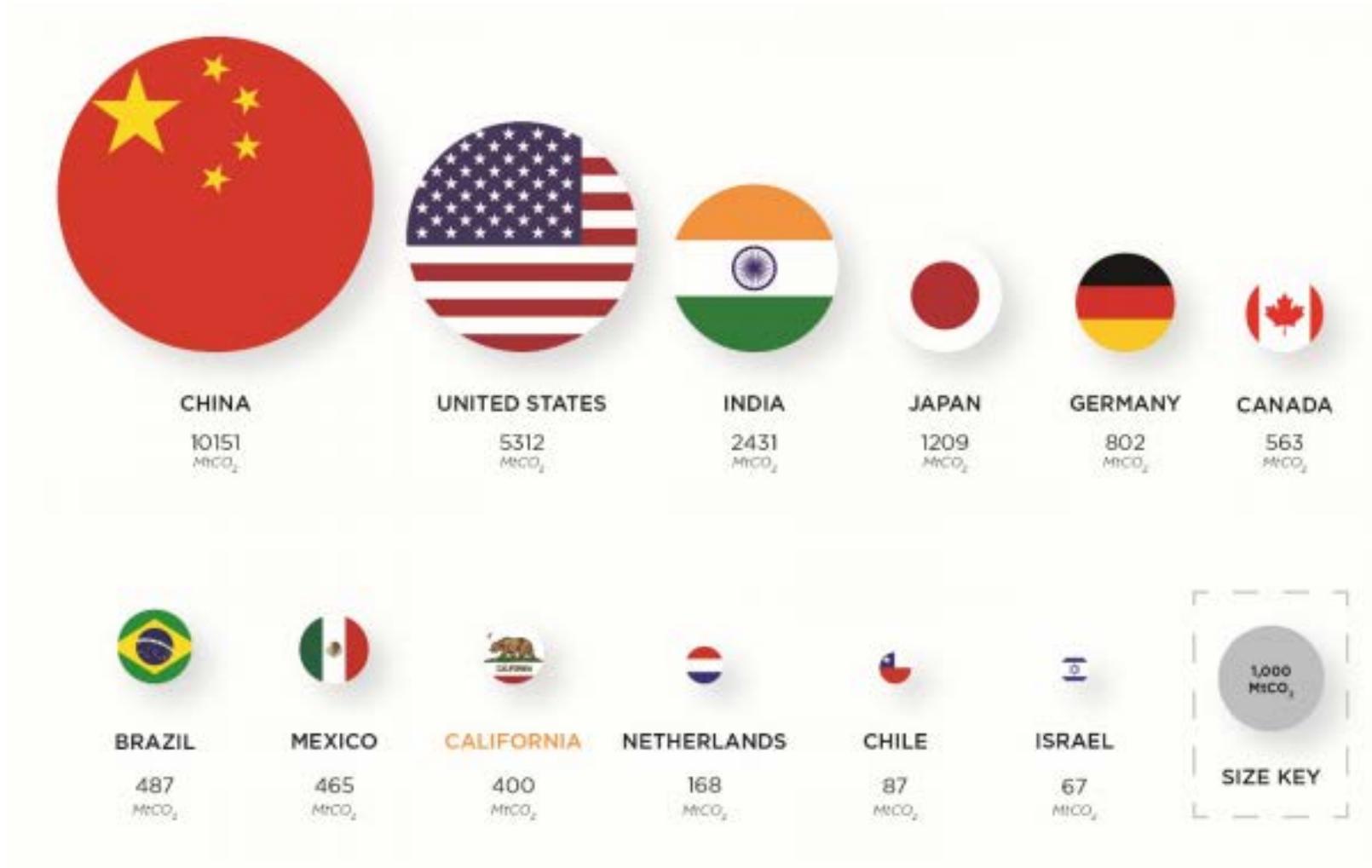
Inclusive Action towards a Net-zero
Emissions Future



Robert B. Weisenmiller, Chair
October 11, 2018
California Energy Commission

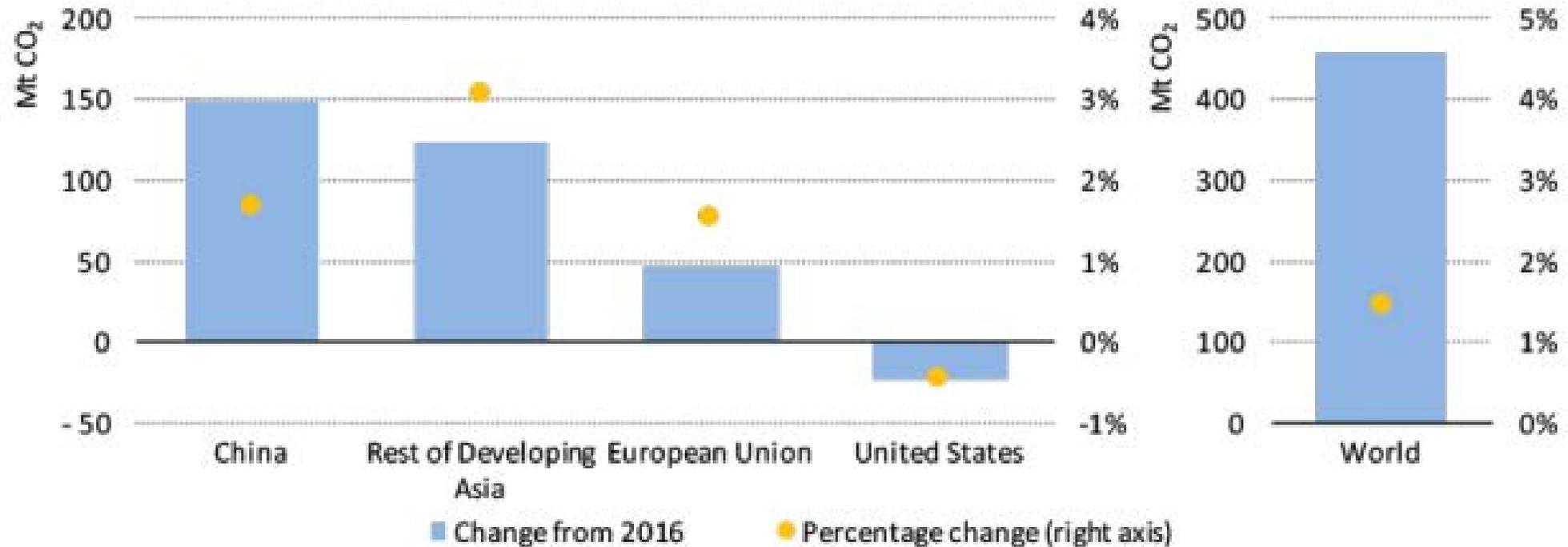


California represents 1 Percent of Global GHG Emissions





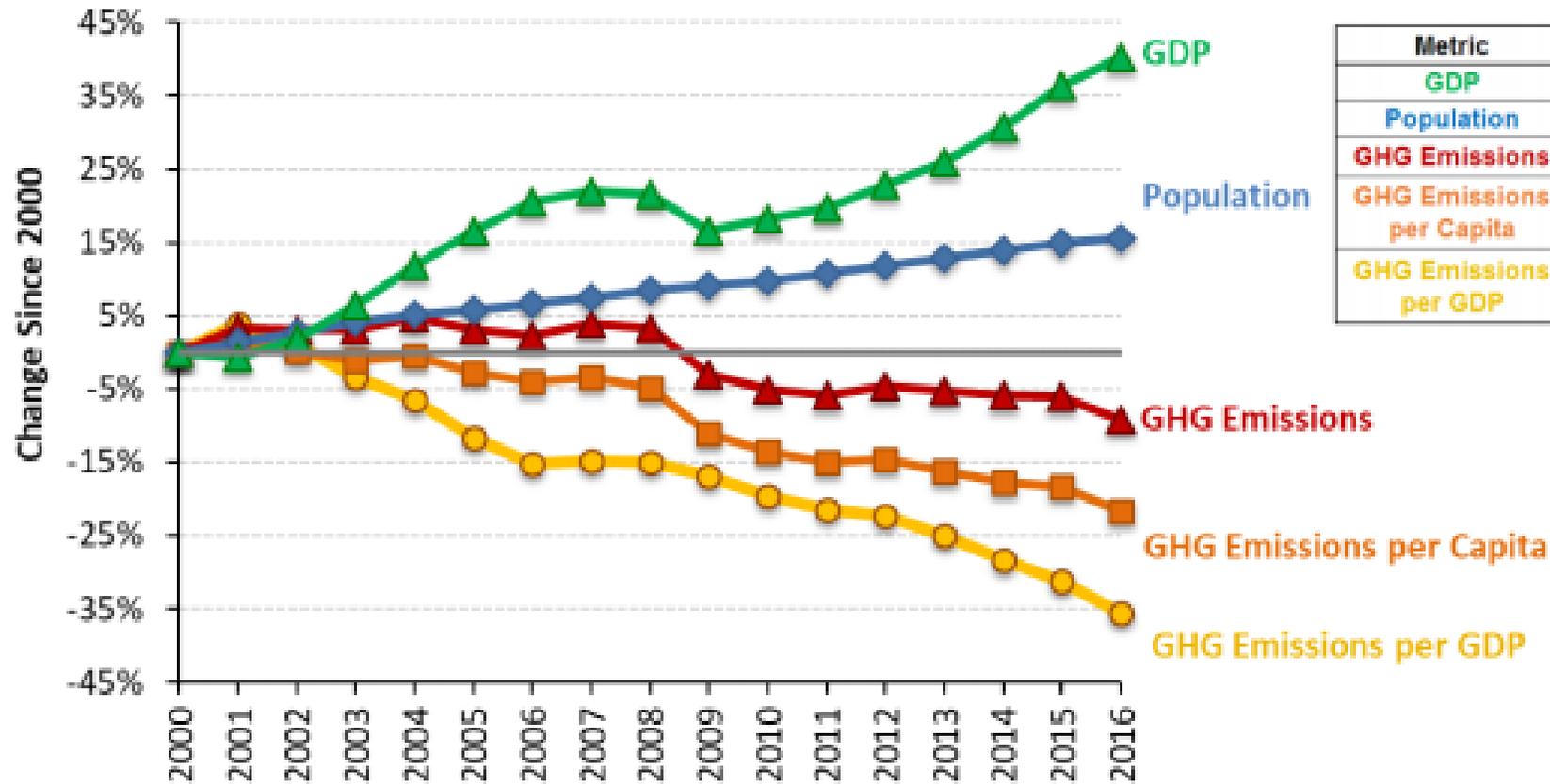
Change in Energy-related CO₂ Emissions (2017)



Source: IEA, Global Energy and CO₂ Status Report, 2017



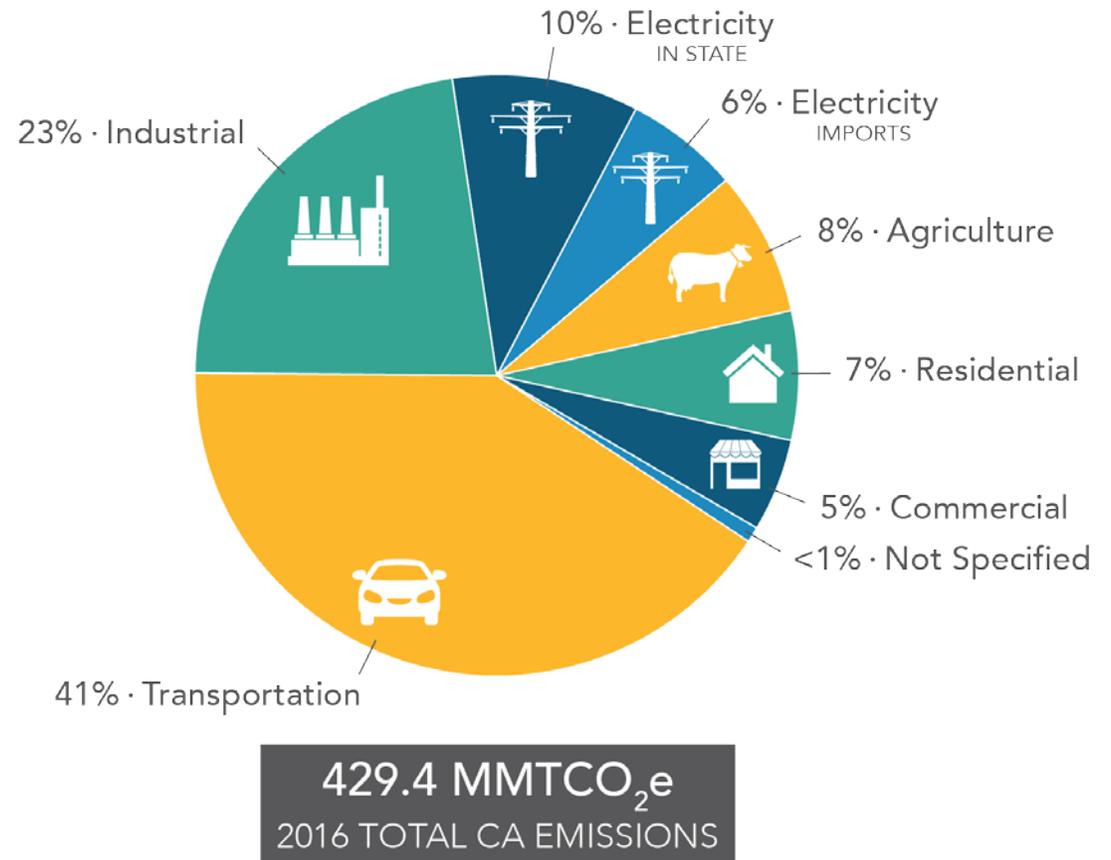
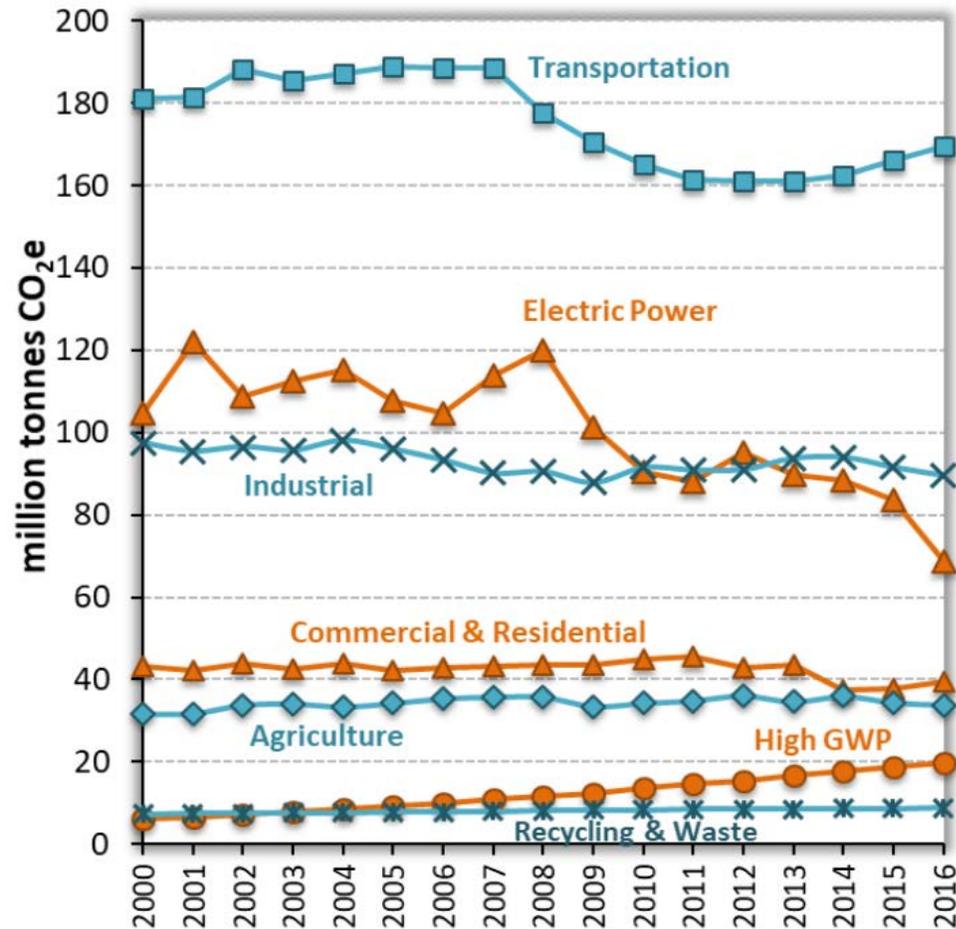
California meets 2020 GHG Target 4 Years Early



Metric	Associated 2016 Value
GDP	2.3 trillion (2009 \$)
Population	39.3 million
GHG Emissions	429.33 MMTCO₂e
GHG Emissions per Capita	10.8 metric tons CO₂e per person
GHG Emissions per GDP	187 metric tons CO₂e per million dollars



Transportation Emits Half of GHG



Source: California Air Resources Board, *California's Greenhouse Gas Emission Inventory*



Renewable and Carbon-Free Electricity



This doesn't include hydro or nuclear. If they were included then CA's electricity supply would be 60% GHG free



Just RPS-eligible renewables



Carbon free electricity



5 Million ZEVs by 2030

Executive Order:

- 250,000 chargers
- 200 H2 stations

Recent Laws:

Assess needs

- Reduce grid costs
- Reduce TNC GHG
- Offer incentives
- HOV access





2019 Residential Standards

Mandatory Measures

- Wall insulation
- Gas furnaces fans
- Fans for small duct high velocity systems
- Air Filtration
- Adopted ASHRAE 62.2-2016 with Amendments

Prescriptive Measures

Photovoltaic systems requirements

Envelope:

- Fenestration
- Door insulation
- Quality insulation a prescriptive requirement
- Roof deck insulation
- Wall assembly

Water Heating:

- Options for heat pump water heaters
- Options for storage gas water heaters.



No Time to Wait

“For many scientists, this is the year they started living climate change rather than just studying it.”

Source: *New York Times*, August 9, 2018

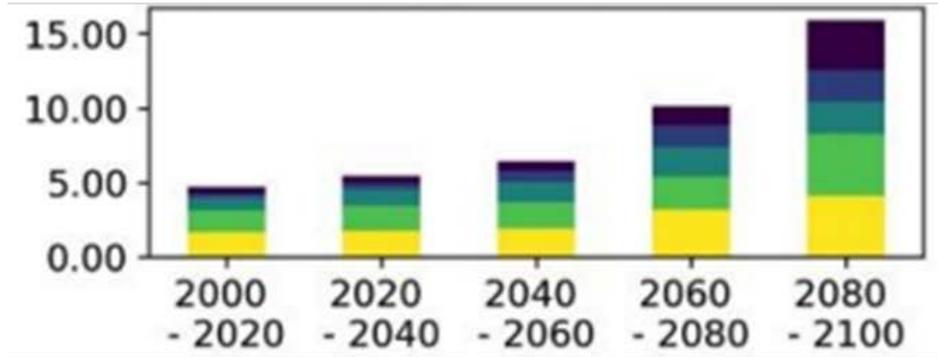


Source: *The Economist*, August 2, 2018

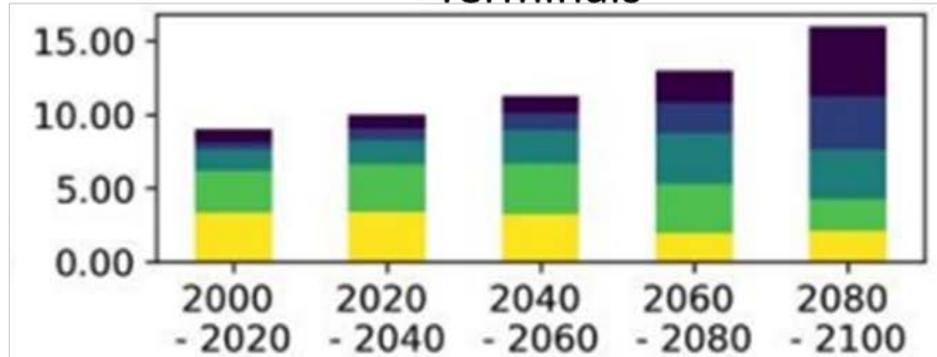


California Climate Change Impacts: Transportation Fuel Sector Flood Risk

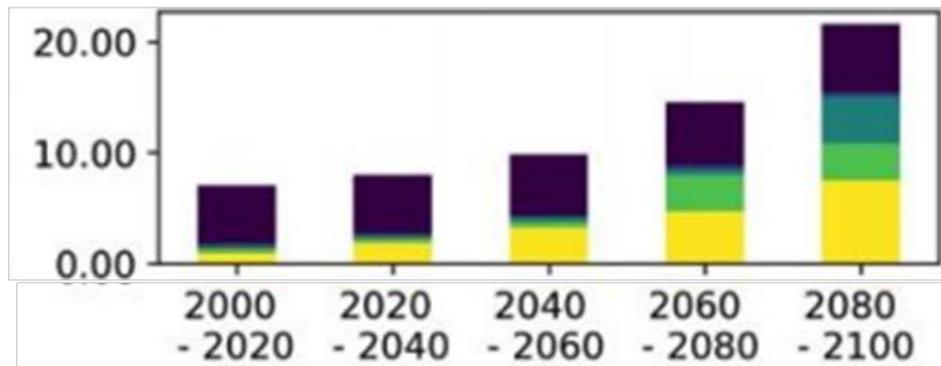
Refineries



Terminals



Docks

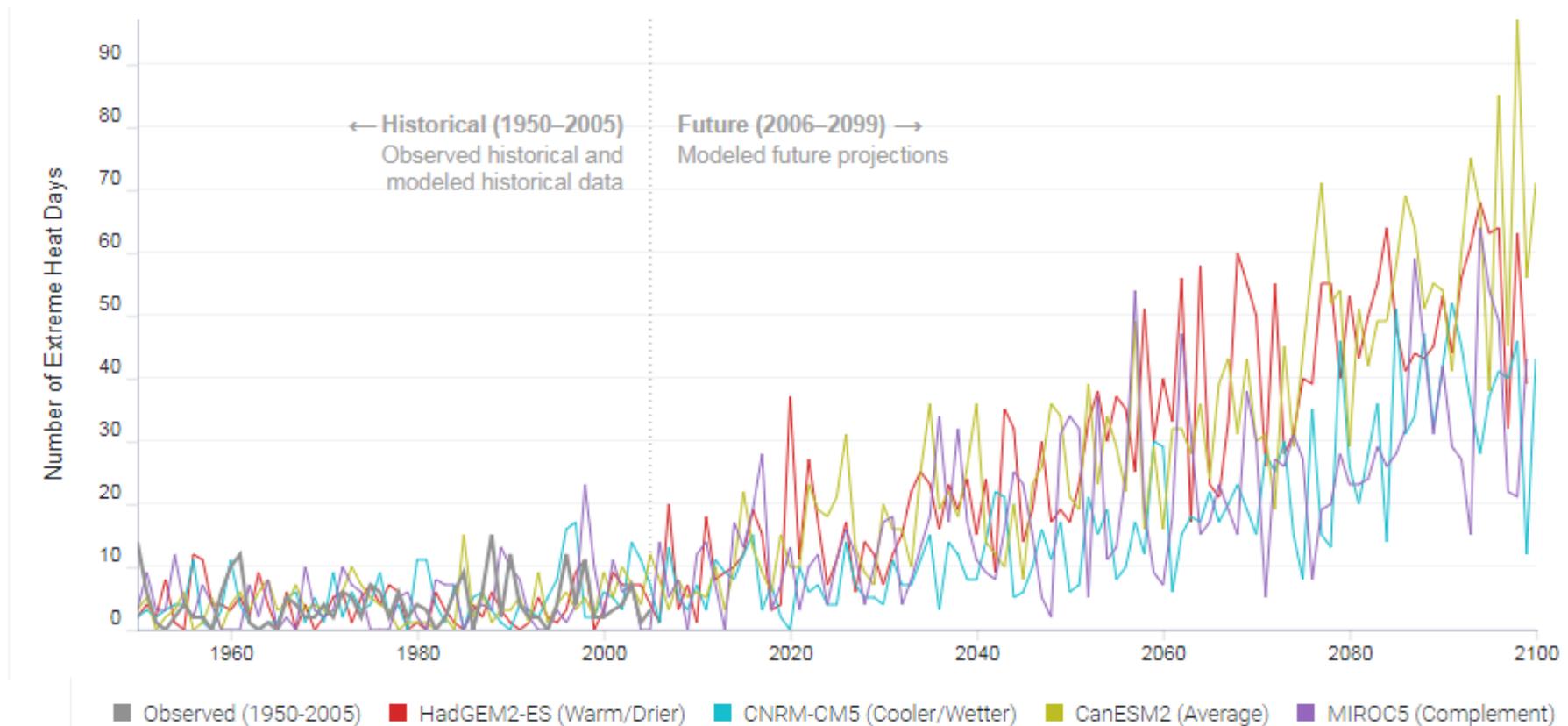


Source: Radke, J.D, G.S. Biging, K. Roberts, M. Schmidt-Poolman, H. Foster, E. Roe, Y. Ju, S. Lindbergh, T. Beach, L. Maier, Y. He, M. Ashenfarb, P. Norton, M. Wray, A. Alruheili, S. Yi, R. Rau, J. Collins, D. Radke, M. Coufal, S. Marx, A. Gohar, D. Moanga, V. Ulyashin, A. Dalal. (University of California, Berkeley) 2018. *Assessing Extreme Weather-Related Vulnerability and Identifying Resilience Options for California's Interdependent Transportation Fuel Sector*. California's Fourth Climate Change Assessment, California Energy Commission. Publication Number: CCA4-CEC-2018-012.



California Climate Change Impacts: Greater Variability and Higher Extremes

Days per year when maximum temperature in Sacramento is projected to be above 103.8 °F under the RCP 8.5 scenario (emissions rise strongly through 2050 and plateau around 2100).



Source: Cal-Adapt. Data: LOCA Downscaled Climate Projections (Scripps Institution of Oceanography), Gridded Historical Observed Meteorological and Hydrological Data (University of Colorado, Boulder).



Adaptation needs will be less if Global GHG Emissions are greatly reduced

